

PATENT COOPERATION TREATY

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

To:
**KONINKLIJKE PHILIPS ELECTRONICS
N.V.**
 Attn. Gathman, Laurie E.
 P.O. Box 3001
 Briarcliff Manor, NY 10510-8001
 UNITED STATES OF AMERICA

04 JUN 14 AM 9:10
**NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT AND
THE WRITTEN OPINION OF THE INTERNATIONAL
SEARCHING AUTHORITY, OR THE DECLARATION**

(PCT Rule 44.1)

Applicant's or agent's file reference PHUS030036WO	Date of mailing (day/month/year) 14/06/2004
International application No. PCT/IB2004/000489	International filing date (day/month/year) 23/02/2004
Applicant KONINKLIJKE PHILIPS ELECTRONICS, N.V.	

1. The applicant is hereby notified that the international search report and the written opinion of the International Searching Authority have been established and are transmitted herewith.

Filing of amendments and statement under Article 19:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO, 34 chemin des Colombettes
1211 Geneva 20, Switzerland, Fascimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. The applicant is hereby notified that no international search report will be established and that the declaration under Article 17(2)(a) to that effect and the written opinion of the International Searching Authority are transmitted herewith.

3. **With regard to the protest** against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

- the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.
- no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. **Reminders**

Shortly after the expiration of **18 months** from the priority date, the international application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the international application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for international publication.

The applicant may submit comments on an informal basis on the written opinion of the International Searching Authority to the International Bureau. The International Bureau will send a copy of such comments to all designated Offices unless an international preliminary examination report has been or is to be established. These comments would also be made available to the public but not before the expiration of 30 months from the priority date.

Within **19 months** from the priority date, but only in respect of some designated Offices, a demand for international preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until **30 months** from the priority date (in some Offices even later); otherwise, the applicant must, **within 20 months** from the priority date, perform the prescribed acts for entry into the national phase before those designated Offices.

In respect of other designated Offices, the time limit of **30 months** (or later) will apply even if no demand is filed within 19 months.

See the Annex to Form PCT/IB/301 and, for details about the applicable time limits, Office by Office, see the *PCT Applicant's Guide*, Volume II, National Chapters and the WIPO Internet site.

Name and mailing address of the International Searching Authority  European Patent Office, P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Raoul Emme
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NOTES TO FORM PCT/ISA/220

These Notes are intended to give the basic instructions concerning the filing of amendments under article 19. The Notes are based on the requirements of the Patent Cooperation Treaty, the Regulations and the Administrative Instructions under that Treaty. In case of discrepancy between these Notes and those requirements, the latter are applicable. For more detailed information, see also the PCT Applicant's Guide, a publication of WIPO.

In these Notes, "Article", "Rule", and "Section" refer to the provisions of the PCT, the PCT Regulations and the PCT Administrative Instructions respectively.

INSTRUCTIONS CONCERNING AMENDMENTS UNDER ARTICLE 19

The applicant has, after having received the international search report, one opportunity to amend the claims of the international application. It should however be emphasized that, since all parts of the international application (claims, description and drawings) may be amended during the international preliminary examination procedure, there is usually no need to file amendments of the claims under Article 19 except where, e.g. the applicant wants the latter to be published for the purposes of provisional protection or has another reason for amending the claims before international publication. Furthermore, it should be emphasized that provisional protection is available in some States only.

What parts of the international application may be amended?

Under Article 19, only the claims may be amended.

During the international phase, the claims may also be amended (or further amended) under Article 34 before the International Preliminary Examining Authority. The description and drawings may only be amended under Article 34 before the International Examining Authority.

Upon entry into the national phase, all parts of the international application may be amended under Article 28 or, where applicable, Article 41.

When?

Within 2 months from the date of transmittal of the international search report or 16 months from the priority date, whichever time limit expires later. It should be noted, however, that the amendments will be considered as having been received on time if they are received by the International Bureau after the expiration of the applicable time limit but before the completion of the technical preparations for international publication (Rule 46.1).

Where not to file the amendments?

The amendments may only be filed with the International Bureau and not with the receiving Office or the International Searching Authority (Rule 46.2).

Where a demand for international preliminary examination has been/is filed, see below.

How?

Either by cancelling one or more entire claims, by adding one or more new claims or by amending the text of one or more of the claims as filed.

A replacement sheet must be submitted for each sheet of the claims which, on account of an amendment or amendments, differs from the sheet originally filed.

All the claims appearing on a replacement sheet must be numbered in Arabic numerals. Where a claim is cancelled, no renumbering of the other claims is required. In all cases where claims are renumbered, they must be renumbered consecutively (Administrative Instructions, Section 205(b)).

The amendments must be made in the language in which the international application is to be published.

What documents must/may accompany the amendments?

Letter (Section 205(b)):

The amendments must be submitted with a letter.

The letter will not be published with the international application and the amended claims. It should not be confused with the "Statement under Article 19(1)" (see below, under "Statement under Article 19(1)").

The letter must be in English or French, at the choice of the applicant. However, if the language of the international application is English, the letter must be in English; if the language of the international application is French, the letter must be in French.

NOTES TO FORM PCT/ISA/220 (continued)

The letter must indicate the differences between the claims as filed and the claims as amended. It must, in particular, indicate, in connection with each claim appearing in the international application (it being understood that identical indications concerning several claims may be grouped), whether

- (i) the claim is unchanged;
- (ii) the claim is cancelled;
- (iii) the claim is new;
- (iv) the claim replaces one or more claims as filed;
- (v) the claim is the result of the division of a claim as filed.

The following examples illustrate the manner in which amendments must be explained in the accompanying letter:

1. [Where originally there were 48 claims and after amendment of some claims there are 51]:
"Claims 1 to 29, 31, 32, 34, 35, 37 to 48 replaced by amended claims bearing the same numbers; claims 30, 33 and 36 unchanged; new claims 49 to 51 added."
2. [Where originally there were 15 claims and after amendment of all claims there are 11]:
"Claims 1 to 15 replaced by amended claims 1 to 11."
3. [Where originally there were 14 claims and the amendments consist in cancelling some claims and in adding new claims]:
"Claims 1 to 6 and 14 unchanged; claims 7 to 13 cancelled; new claims 15, 16 and 17 added." or
"Claims 7 to 13 cancelled; new claims 15, 16 and 17 added; all other claims unchanged."
4. [Where various kinds of amendments are made]:
"Claims 1-10 unchanged; claims 11 to 13, 18 and 19 cancelled; claims 14, 15 and 16 replaced by amended claim 14; claim 17 subdivided into amended claims 15, 16 and 17; new claims 20 and 21 added."

"Statement under article 19(1)" (Rule 46.4)

The amendments may be accompanied by a statement explaining the amendments and indicating any impact that such amendments might have on the description and the drawings (which cannot be amended under Article 19(1)).

The statement will be published with the international application and the amended claims.

It must be in the language in which the international application is to be published.

It must be brief, not exceeding 500 words if in English or if translated into English.

It should not be confused with and does not replace the letter indicating the differences between the claims as filed and as amended. It must be filed on a separate sheet and must be identified as such by a heading, preferably by using the words "Statement under Article 19(1)."

It may not contain any disparaging comments on the international search report or the relevance of citations contained in that report. Reference to citations, relevant to a given claim, contained in the international search report may be made only in connection with an amendment of that claim.

Consequence if a demand for international preliminary examination has already been filed

If, at the time of filing any amendments under Article 19, a demand for international preliminary examination has already been submitted, the applicant must preferably, at the same time of filing the amendments with the International Bureau, also file a copy of such amendments with the International Preliminary Examining Authority (see Rule 62.2(a), first sentence).

Consequence with regard to translation of the international application for entry into the national phase

The applicant's attention is drawn to the fact that, where upon entry into the national phase, a translation of the claims as amended under Article 19 may have to be furnished to the designated/elected Offices, instead of, or in addition to, the translation of the claims as filed.

For further details on the requirements of each designated/elected Office, see Volume II of the PCT Applicant's Guide.

PATENT COOPERATION TREATY

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference PHUS030036WO	FOR FURTHER ACTION see Form PCT/ISA/220 as well as, where applicable, item 5 below.	
International application No. PCT/IB2004/000489	International filing date (<i>day/month/year</i>) 23/02/2004	(Earliest) Priority Date (<i>day/month/year</i>) 25/02/2003
Applicant KONINKLIJKE PHILIPS ELECTRONICS, N.V.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 4 sheets.

It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

The international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, see Box No. I.

2. Certain claims were found unsearchable (See Box II).

3. Unity of invention is lacking (see Box III).

4. With regard to the title,

the text is approved as submitted by the applicant.

the text has been established by this Authority to read as follows:

THREE-DIMENSIONAL WAVELET VIDEO CODING USING MOTION-COMPENSATED TEMPORAL
FILTERING ON OVERCOMPLETE WAVELET EXPANSIONS

5. With regard to the **abstract**,

the text is approved as submitted by the applicant.

the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box No. IV. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. With regards to the **drawings**,

a. the figure of the drawings to be published with the abstract is Figure No. 3

as suggested by the applicant.

as selected by this Authority, because the applicant failed to suggest a figure.

as selected by this Authority, because this figure better characterizes the invention.

b. none of the figures is to be published with the abstract.

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H04N7/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 H04N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, INSPEC, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>VAN DER SCHAAR M ET AL: "Fully Scalable 3-D Overcomplete Wavelet Video Coding using Adaptive Motion Compensated Temporal Filtering" ISO/IEC JTC1/SC29/WG21 MPEG2002/M9037, October 2002 (2002-10), pages 1-8, XP002282536 Shanghai, China abstract Section 3. Proposed Overcomplete Wavelet Video Coding using Adaptive Motion Compensated Temporal Filtering figures 2-7</p> <p>----</p> <p>-/-</p>	1-27

Further documents are listed in the continuation of box C.

Patent family members are listed in annex.

° Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

Date of the actual completion of the international search

2 June 2004

Date of mailing of the international search report

14/06/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
 NL - 2280 HV Rijswijk
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
 Fax: (+31-70) 340-3016

Authorized officer

Sampels, M

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	OHM J-R: "Complexity and Delay Analysis of MCTF Interframe Wavelet Structures" ISO/IEC JTC1/SC29/WG11 MPEG2002/M8520, July 2002 (2002-07), pages 1-16, XP002282535 Klagenfurt, Austria Section 2. MCTF in a lifting filter structure ---	1, 4, 7, 10, 13, 15, 17-21, 24, 27
A	XIN LI ET AL: "Efficient motion field representation in the wavelet domain for video compression" PROCEEDINGS 2002 INTERNATIONAL CONFERENCE ON IMAGE PROCESSING. ICIP 2002. ROCHESTER, NY, SEPT. 22 - 25, 2002, INTERNATIONAL CONFERENCE ON IMAGE PROCESSING, NEW YORK, NY: IEEE, US, vol. 2 OF 3, 22 September 2002 (2002-09-22), pages 257-260, XP010607703 ISBN: 0-7803-7622-6 the whole document ---	2, 5, 8, 11, 14, 16, 22, 25
A	PARK H-W ET AL: "MOTION ESTIMATION USING LOW-BAND-SHIFT METHOD FOR WAVELET-BASED MOVING-PICTURE CODING" IEEE TRANSACTIONS ON IMAGE PROCESSING, IEEE INC. NEW YORK, US, vol. 9, no. 4, April 2000 (2000-04), pages 577-587, XP000923958 ISSN: 1057-7149 abstract page 577, right-hand column, line 7 - line 12 page 577, right-hand column, line 20 - line 25 Section III. Proposed Motion Estimation and Compensation in Wavelet Domain figures 3, 4, 6 ---	3, 6, 9, 12, 14, 16, 23, 26
A	ANDREOPoulos Y ET AL: "Open-Loop, In-Band, Motion-Compensated Temporal Filtering For Objective Full-Scalability In Wavelet Video Coding" ISO/IEC JTC1/SC29/WG11 MPEG2002/M9026, October 2002 (2002-10), pages 1-19, XP002282534 Shanghai, China abstract page 2, line 9 - line 11 page 2, line 16 - line 19 page 6, line 13 - line 27 page 7, line 11 - line 27 figure 4 ---	1-27

-/-

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ZACIU R ET AL: "IMAGE COMPRESSION USING AN OVERCOMPLETE DISCRETE WAVELET TRANSFORM" IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, IEEE INC. NEW YORK, US, vol. 42, no. 3, 1 August 1996 (1996-08-01), pages 800-807, XP000638570 ISSN: 0098-3063 the whole document -----	1-27

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:

see form PCT/ISA/220

PCT

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

		Date of mailing (day/month/year) see form PCT/ISA/210 (second sheet)
Applicant's or agent's file reference see form PCT/ISA/220		FOR FURTHER ACTION See paragraph 2 below
International application No. PCT/IB2004/000489	International filing date (day/month/year) 23.02.2004	Priority date (day/month/year) 25.02.2003
International Patent Classification (IPC) or both national classification and IPC H04N7/26		
Applicant KONINKLIJKE PHILIPS ELECTRONICS, N.V.		

1. This opinion contains indications relating to the following items:

- Box No. I Basis of the opinion
- Box No. II Priority
- Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- Box No. IV Lack of unity of invention
- Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- Box No. VI Certain documents cited
- Box No. VII Certain defects in the international application
- Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



European Patent Office - Gitschner Str. 103
D-10958 Berlin
Tel. +49 30 25901 - 0
Fax: +49 30 25901 - 840

Authorized Officer

Sampels, M

Telephone No. +49 30 25901-420



Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 a sequence listing
 table(s) related to the sequence listing
 - b. format of material:
 in written format
 in computer readable form
 - c. time of filing/furnishing:
 contained in the international application as filed.
 filed together with the international application in computer readable form.
 furnished subsequently to this Authority for the purposes of search.
3. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IB2004/000489

Box No. II Priority

1. The following document has not been furnished:

copy of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(a)).
 translation of the earlier application whose priority has been claimed (Rule 43bis.1 and 66.7(b)).

Consequently it has not been possible to consider the validity of the priority claim. This opinion has nevertheless been established on the assumption that the relevant date is the claimed priority date.

2. This opinion has been established as if no priority had been claimed due to the fact that the priority claim has been found invalid (Rules 43bis.1 and 64.1). Thus for the purposes of this opinion, the international filing date indicated above is considered to be the relevant date.

3. Additional observations, if necessary:

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4-27
	No: Claims	1-3
Inventive step (IS)	Yes: Claims	
	No: Claims	1-27
Industrial applicability (IA)	Yes: Claims	1-27
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IB04/00489

Re Item I

Basis of the report

Description, pages:

1-20 as originally filed

Claims, No.:

1-27 as originally filed

Drawings, No.:

1/8-8/8 as originally filed

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents:

- D1: VAN DER SCHAAR M ET AL: 'Fully Scalable 3-D Overcomplete Wavelet Video Coding using Adaptive Motion Compensated Temporal Filtering' ISO/IEC JTC1/SC29/WG21 MPEG2002/M9037, October 2002 (2002-10), pages 1-8, XP002282536 Shanghai, China
- D2: OHM J-R: 'Complexity and Delay Analysis of MCTF Interframe Wavelet Structures' ISO/IEC JTC1/SC29/WG11 MPEG2002/M8520, July 2002 (2002-07), pages 1-16, XP002282535 Klagenfurt, Austria
- D3: XIN LI ET AL: 'Efficient motion field representation in the wavelet domain for video compression' PROCEEDINGS 2002 INTERNATIONAL CONFERENCE ON IMAGE PROCESSING. ICIP 2002. ROCHESTER, NY, SEPT. 22 - 25, 2002, INTERNATIONAL CONFERENCE ON IMAGE PROCESSING, NEW YORK, NY: IEEE, US, vol. 2 OF 3, 22 September 2002 (2002-09-22), pages 257-260, XP010607703 ISBN: 0-7803-7622-6
- D4: PARK H-W ET AL: 'MOTION ESTIMATION USING LOW-BAND-SHIFT METHOD FOR WAVELET-BASED MOVING-PICTURE CODING' IEEE TRANSACTIONS ON IMAGE PROCESSING, IEEE INC. NEW YORK, US, vol. 9, no. 4, April 2000 (2000-04), pages 577-587, XP000923958 ISSN: 1057-7149

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.
10/546623
PCT/IB04/00489

D5: ANDREOPoulos Y ET AL: 'Open-Loop, In-Band, Motion-Compensated Temporal Filtering For Objective Full-Scalability In Wavelet Video Coding' ISO/IEC JTC1/SC29/WG11 MPEG2002/M9026, October 2002 (2002-10), pages 1-19, XP002282534 Shanghai, China

D6: ZACIU R ET AL: 'IMAGE COMPRESSION USING AN OVERCOMPLETE DISCRETE WAVELET TRANSFORM' IEEE TRANSACTIONS ON CONSUMER ELECTRONICS, IEEE INC. NEW YORK, US, vol. 42, no. 3, 1 August 1996 (1996-08-01), pages 800-807, XP000638570 ISSN: 0098-3063

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claims 1-3** is not new in the sense of Article 33(2) PCT.
 - 1.1 **Claim 1** is not new in the sense of Article 33(2) PCT, because D1 discloses (the references in parentheses applying to this document):

A method for compressing an input stream of video frames comprising (first line of abstract):

 - transforming each of a plurality of video frames into a plurality of wavelet bands in one or more decomposition levels (page 3, line 15-16);
 - performing motion compensated temporal filtering on at least some of the wavelet bands (page 3, line 16-17) to generate a plurality of high-pass frames and a plurality of low-pass frames (Figures 5-7), the low-pass frames at each decomposition level generated using the high-pass frames at that decomposition level (this feature is in the broad scope of the wording not novel, because it is implicit with the use of standard temporal filters that high-pass frames are used (see Item VIII 1); and
 - compressing the high-pass frames and the low-pass frames (page 3, line 17-18 and Figure 3) for transmission over a network (page 1, line 20).
- 1.2 **Claim 2** is not new in the sense of Article 33(2) PCT, because D1 discloses also the added features:
 - generating one or more overcomplete wavelet expansions used during the motion compensated temporal filtering (page 3, lines 14-15);
 - generating one or more motion vectors during the motion compensated temporal filtering (Figure 3: MV in boxes MCTF);
 - compressing the one or more motion vectors (Figure 3 and page 6, lines 11-12);

and

- multiplexing the compressed high-pass frames, low-pass frames, and one or more motion vectors onto an output bitstream (Figure 3; by sending all generated data to a single bitstream, it is implicit that the data is multiplexed).

- 1.3 **Claim 3** is not new in the sense of Article 33(2) PCT, because D1 discloses also the added features:
 - generating an overcomplete wavelet expansion (Figure 4) by:
 - shifting a particular one of the wavelet bands a plurality of times to produce a plurality of shifted wavelet bands, the shifted wavelet bands each shifted differently (page 4, lines 8-11); and
 - interleaving wavelet coefficients in the particular wavelet band and wavelet coefficients in each of the shifted wavelet bands to produce a set of overcomplete wavelet coefficients that represent the overcomplete wavelet expansion (page 4, lines 11-12).
2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of **claims 4-6** does not involve an inventive step in the sense of Article 33(3) PCT.
 - 2.1 The document D1 is regarded as being the closest prior art to the subject-matter of claim 4, and discloses (the references applying to this document) a method for compressing an input stream of video frames as mentioned in paragraph 1. The subject-matter of claim 4 is the directly corresponding inverse method for decompressing. It is obvious to the skilled person how to invert a coding method in order to obtain such a decoding method. On page 7, lines 13-19, decoders are even explicitly mentioned. The feature "starting at a lowest decomposition level" is obvious by lines 15-18 on page 7.

The subject-matter proposed in **claim 4** of the present application can therefore not be considered as involving an inventive step (Article 33(3) PCT).
 - 2.2 The additional features of **claims 5 and 6** correspond also directly with claims 2 and 3, so that they are also obvious to the skilled person.
 3. The same reasoning applies, mutatis mutandis, to the subject-matter of the corresponding **claims 7, 10, 13, 15, 17, 18, 19, 20, 21, 24, 27**. All

correspondences are based on normal design procedure. Said claims are therefore also considered not inventive.

4. Dependent **claims 8, 9, 11, 12, 14, 16, 22, 23, 25, 26** do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty or inventive step, see documents D1-D6 and the corresponding passages cited in the search report.
5. The industrial applicability of video coding as disclosed in the present application is obvious.

Re Item VII

Certain defects in the international application

1. The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (documents D1-D6) being placed in the preamble (Rule 6.3(b)(i) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).
2. Claim 13 comprises all the features of claim 7 and claim 15 comprises all the features of claim 10. Therefore **claims 13 and 15** are not appropriately formulated as dependent claims (Rule 6.4 PCT).

Re Item VIII

Certain observations on the international application

1. The wording "the low-pass frames at each decomposition level generated using the high-pass frames at that decomposition level" used in **claim 1** is unclear, because it leaves the reader in doubt about the relation between low-pass and high-pass frames. This lack of clarity is in conflict with the requirements of Article 6 PCT.

The attention of the applicant is drawn to the fact that even when read in the light of the description, this relation is not based on an inventive step over the disclosure of D1 in combination with for example D2. D1 refers to "different filters" that can be used (page 5, line 9), in particular to "lifting filters" (page 5, line 14), and D2 for example presents a lifting filter that uses the high-pass frame to generate the low-pass frame in the same manner as the application (see for example D2: page 3, formula (2)).

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IB04/00489

2. Claims 17 and 21 are equivalent, as well as claims 19 and 27.
3. The video signal of **claims 19 and 27** is not defined in its technical features, but only in the way how it is produced. This is not allowable under Article 6 PCT, because the intended limitations are not clear from said claims. It cannot be assessed by the video signal itself how it was produced.
4. Claim 20 refers to claim 19, however the former aims at a video receiver whereas the latter aims at a video signal.